ABSTRACT

Aim and objectives:

The aim of this in vitro study was to investigate the ability of selected lactobacilli strains used in commercially available probiotic products, to inhibit growth of oral mutans streptococci

The objectives were to evaluate the inhibition of *S. mutans* (Standard MTCC and clinical strains) by probiotic cell free supernatant and live cells and to evaluate the inhibition of *S. mutans* by probiotic combinations.

Methodology:

Lawn cultures of *S. mutans* were made on MHA plates supplemented with 5% sheep blood agar. Sterile cotton swabs were dipped in the broth cultures of *S. mutans* and the inoculums were seeded in three different directions to form lawn cultures. Plates were allowed to dry for 10 minutes, wells of 8mm diameter were punched using sterile cork borer.25, 50, 100, 150µl of the 48hrs broth cultures and cell free supernatants of the probotic strains were added and the plates were incubated at 37°c at 5% CO_2 .Diameter of zone of inhibition around the wells was measured in mm using HiAntibiotic zone scale after 24hrs of inhibition.

Lawn cultures of *S. mutans* were made in MSA plates supplemented with 5% sheep blood agar. Sterile cotton swabs dipped in fresh broth cultures of *S. mutans* is inoculated and seeded to lawn culture and the plates were allowed to dry for 10 mins .Wells of 8mm diameter were punched using sterile cork borer and 200µl of 48 hrs broth cultures and cell free supernatant combinations of probiotic strains were added in the presence of 5% CO_2 .Diameter of zone of inhibition was measured around the wells using HiAntibiotic zone scale in mm after incubation of 24 hrs.

S. mutans were incorporated in the molten agar at 0.5% w/v and poured into sterile petriplates and allowed to solidify. Wells of 8mm diameter were punched using sterile cork borer 25,50,100,150µl of broth cultures and cell free supernatant of the probiotic strains were added in the wells using sterile microtips. The diameter of zone of inhibition was measured in mm using HiAntibiotic zone scale after incubation of 48 hrs in the presence of 5% CO_2 at 37°c .

Results:

Results showed that *L. fermentum* and *L. rhamnosus* demonstrated the largest zones of clearance for both clinical and standard MTCC strains of Mutans streptococci. The weakest zone of inhibition of mutans streptococci was displayed by *L acidophilus* and *L.amylovorus.* Both cell free supernatant and live cells of probiotic strains of *L. fermentum* and *L. rhamnosus* could significantly inhibit clinical and standard MTCC strains of *Mutans streptococci*. The probiotics in higher concentrations such as in 100µl, 125µl, 150µl were able to significantly inhibit *Mutans streptococci* when compared to lower concentrations. The combinations of various probiotic strains better inhibited pathogenic mutans streptococci rather than individual strains.

Conclusion:

The present study concluded that live probiotics and/or cell-free probiotics are capable of inhibiting *S. mutans.* The probiotic strains in combinations better inhibited *S. mutans* than individual strains.

Keywords:

Probiotics, *S. mutans,* zone of inhibition, culture.